

City of Garden Grove

INTER-DEPARTMENTAL MEMORANDUM

To: Allan L. Roeder  
Dept: Interim City Manager  
Subject: ADOPTION OF A RESOLUTION OPPOSING THE CURRENT TERMS FOR CONSTRUCTION OF THE PROPOSED POSEIDON DESALINATION PROJECT; APPROVAL OF LETTER TO ORANGE COUNTY WATER DISTRICT BOARD OF DIRECTORS REGARDING PROJECT

From: William E. Murray  
Dept: Public Works  
Date: July 28, 2015

OBJECTIVE

For the City Council to consider adoption of a Resolution opposing the current terms for construction of the proposed Poseidon Desalination Project in Huntington Beach, and approval of correspondence to the Orange County Water District Board of Directors expressing the City's opposition to the current terms.

BACKGROUND

At its regular meeting of July 14, 2015, the City Council considered adoption of a resolution and letter to the Orange County Water District (OCWD) opposing the Poseidon Desalination Project in Huntington Beach. The City Council received substantial testimony from members of the public, various interest groups, representatives from the Orange County Water District and from Poseidon Resources on the subject. Following public testimony and discussion by the City Council, staff was directed to bring back a revised letter and resolution. More specifically, staff was asked to insure the letter was addressed to the full Board of OCWD; that it communicate the City's strong concerns with the financial impact of the project (including the 50 year term) on Garden Grove ratepayers; that no action be taken until the full range of alternative water sources has been fully analyzed to the same level as the Poseidon desalination proposal; that the City desires to be an active participant with OCWD and other agencies in the identification and evaluation of alternative water sources, including desalination and that whatever choice is made, it must be balanced and fair to the taxpaying public.

DISCUSSION

On May 14, 2015, the Orange County Water District approved a term sheet with Poseidon Resources, which outlines the overall structure of an agreement to purchase 50 million gallons of water a day created by the proposed Huntington Beach Ocean Desalination Plant. The financial implications of the term sheet pose significant impacts on water consumers in Garden Grove with increases estimated for typical residential users of \$6 to \$12 every two months. Under the current provisions of the term sheet, Garden Grove consumers would be burdened with additional expenses as a result of the desalination project for the next 30 to 50 years.

ADOPTION OF A RESOLUTION OPPOSING THE CURRENT TERMS FOR CONSTRUCTION OF THE PROPOSED POSEIDON DESALINATION PROJECT; APPROVAL OF LETTER TO ORANGE COUNTY WATER DISTRICT BOARD OF DIRECTORS REGARDING PROJECT

July 28, 2015

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Staff believes further analysis regarding alternatives to desalination, such as expanding the use of recycled water, storm water infiltration systems, and expanding the Orange County Water District's groundwater replenishment system should be conducted. Absent such analysis, it is impossible to ascertain comparable financial and environmental implications and determine whether desalination is the soundest long-term economic investment for Orange County. Staff has prepared a White Paper to provide the City Council with additional information and analysis regarding the proposed project (see Attachment 3).

Staff is willing to work with the Orange County Water District and other interested parties to insure a thorough examination of a range of water source alternatives, including desalination, so that rate payers are assured of receiving the highest quality water possible, responsibly priced with the least adverse environmental impacts.

FINANCIAL IMPACT

There is a projected impact to the Water Enterprise Fund ranging from \$1 million to \$2 million per year for the next 30 years. This could add from \$6 up to \$12 to the average rate payers' bi-monthly bill.

RECOMMENDATION

It is recommended that the City Council:

- Adopt the attached Resolution opposing the current terms for construction of the proposed Poseidon Desalination Project in Huntington Beach.
- Authorize staff to send the attached letter to the Orange County Water District Board of Directors expressing the City's opposition to the current terms of the Project.



WILLIAM E. MURRAY, P.E.  
Public Works Director

- Attachments:
- 1) Resolution Opposing the Current Terms of the Proposed Poseidon Desalination Project
  - 2) Letter to Orange County Water District Board of Directors
  - 3) Desalination White Paper on the Garden Grove Perspective

Approved for Agenda listing



Allan L. Roeder  
Interim City Manager

GARDEN GROVE CITY COUNCIL

RESOLUTION NO.

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF GARDEN GROVE  
OPPOSING THE CURRENT TERMS FOR CONSTRUCTION OF THE POSEIDON  
DESALINATION PROJECT IN HUNTINGTON BEACH

WHEREAS, the Orange County Water District (OCWD) is currently considering ocean desalination as a way to increase local water supplies;

WHEREAS, desalination is the process of converting water with high salts and mineral concentrations into water usable for potable use or irrigation;

WHEREAS, on May 14, 2015, the OCWD approved a term sheet with Poseidon Resources, which outlines the overall structure of an agreement to purchase 50 million gallons of water a day created by the proposed Huntington Beach Ocean Desalination Plant;

WHEREAS, the financial implications of the term sheet pose significant impacts on water consumers in Garden Grove with increases estimated for typical residential users of \$6 to \$12 bi-monthly;

WHEREAS, under the provisions of the term sheet, Garden Grove consumers would be burdened with additional expenses as a result of the desalination project for the next 30 to 50 years;

WHEREAS, the OCWD has not fully analyzed alternatives to desalination such as expanding the use of recycled water, storm water infiltration systems, expanding the OCWD's groundwater replenishment system and other measures to ascertain comparable financial and environmental implications;

WHEREAS, the assets and liabilities of the project to the basin should be understood and accepted by the Groundwater Producers before the OCWD commits to the project on their behalf;

WHEREAS, the City of Garden Grove supports the research and implementation of environmentally sound yet cost-effective alternative supplies of water; and

WHEREAS, the City of Garden Grove is willing to work with the OCWD and other interested parties to insure a thorough examination of a range of water source alternatives, including desalination, so that ratepayers are assured of receiving the highest quality water possible, responsibly priced with the least adverse environmental impacts.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Garden Grove as follows:

Section 1. The above recitals are true and correct and hereby incorporated herein by reference.

Section 2. The City Council hereby approves a letter to the OCWD Board stating the City's position and recommending that they act in the best interest of the ratepayers.



## CITY OF GARDEN GROVE

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July 28, 2015

Board of Directors  
Orange County Water District  
18700 Ward Street  
Fountain Valley, CA 92708

Bao Nguyen  
Mayor

Steven R. Jones  
Mayor Pro Tem

Christopher V. Phan  
Council Member

Phat Bui  
Council Member

Kris Beard  
Council Member

RE: Opposition to Current Terms for Construction of the Poseidon Desalination Project

Honorable President Green and Directors:

The City of Garden Grove respectfully opposes the current Term Sheet as approved by the Board of Directors of the Orange County Water District for operation and construction of the Poseidon Desalination Plant. While respectful of the Board's efforts over many years to expand both the capacity and availability of water for Garden Grove residents and businesses, we believe the District's current position on the subject project is seriously flawed. We believe it incumbent on us as the elected municipal leadership of Garden Grove to advise you of our opposition as well as to express our commitment to collaborate with the District in identifying the most cost effective, environmentally responsible alternatives possible in meeting Orange County's water needs.

The focus of this correspondence is to provide an overview of our concerns with the Board's approval of the Term Sheet. The attached Resolution – adopted concurrently with City Council approval of this letter – goes into more specific detail as to our concerns. We sincerely hope the Board and District Management will receive the City's input as it is intended.

Topping our list of concerns is the extremely high cost to Garden Grove consumers the Poseidon Project represents. Not only does the Term Sheet pose substantial increases in the cost of water to our residents and business community, it does so for the next 30 years. Any decision by the Board to approve this project with costs in the range cited in the Term Sheet will burden ratepayers for decades. It will adversely impact low and middle income households alike as well as escalate costs for the business community. Ratepayers will be saddled with these costs irrespective of water conservation efforts or the development of alternative water sources.

A second major concern is the lack of identified alternatives to desalination. The Orange County Water District has a long history of thoughtfully examining and implementing cost-effective means of providing water resources to Orange County. We are at a loss to understand why the District has not conducted a similar assessment of alternatives to desalination. At a minimum, we would expect the same

level of analysis that has been put into the feasibility of desalination to be applied to a range of alternatives. These include but are not limited to expanding the recycled water system; constructing additional measures within and adjacent to local storm channels allowing the infiltration of storm water into the basin; expanding OCWD's groundwater replenishment system; purchasing MWDOC water during times of excess water availability and recharging the basin as well as the promotion of water conservation. Absent such an analysis, it is impossible to know whether desalination is the soundest, long term economic investment for Orange County. Similarly, it is impossible to know whether the environmental implications of desalination are comparable to or greater than the range of alternatives available if those alternatives are not fully analyzed.

Finally, we believe it imperative that there be greater engagement of local public and private retail water purveyors, other public agencies (such as the OC Sanitation District and the OC Flood Control District) and consumers in assessing the full range of options, including desalination. The ultimate impact of desalination or any of the alternatives will impact everyone in Orange County. Consequently, all of the stakeholders in providing water to consumers must take an active role in the decision-making process. In so stating, the City of Garden Grove readily acknowledges its prior decision to decline further participation in the Poseidon Huntington Beach Ocean Desalination Workgroup. That decision was made based on the economics of desalination and the lack of identified alternatives subjected to the same level of scrutiny. The City of Garden Grove stands ready to resume an active, participatory role with the District if there is a receptiveness to consider all the alternatives on an equal basis.

In closing, it would be irresponsible of us not to acknowledge the critical water shortage facing all Californians. While Garden Grove is fortunate to have access to the groundwater basin to meet the majority of our demands, we realize this is not the case for either Orange County or the State as a whole. As a consequence, we must all consider the "Big Picture" as well as our own local needs. The Poseidon Desalination Project will not alter in any way the current water shortage nor will any of the identified alternatives - except for greater conservation efforts. Garden Grove water consumers are responding to this challenge as are hundreds of communities throughout the State. The current drought should not be used as a basis for decision-making on a singular project which will have long term financial and environmental consequences.

We look forward to working with the Board and Management of the District to insure all alternatives - including desalination - are thoroughly evaluated on an equal basis to insure water resources for Garden Grove and all of Orange County in a cost effective and environmentally responsible manner for the future. If you wish to discuss this or the attached resolution further, please do not hesitate to contact

Board of Directors  
Orange County Water District  
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William Murray, Public Works Director at [wem@ci.garden-grove.ca.us](mailto:wem@ci.garden-grove.ca.us) or by calling at (714) 741-5379

Sincerely,

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Mayor Bao Nguyen

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Mayor Pro Tem Steve Jones

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Council Member Kris Beard

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Council Member Phat Bui

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Council Member Chris Phan

## Desalination – a White Paper on the Garden Grove Perspective

### OBJECTIVE

To provide the City Council with information and analysis regarding an ocean water desalination facility in Huntington Beach being proposed by the Poseidon Resources Corporation, a private company. The analysis will present costs and benefits as the project relates to the City of Garden Grove (City).

### BACKGROUND

The Poseidon ocean water desalination project located at the AES power plant in Huntington Beach will deliver a maximum of 53,000 AF of water. Poseidon began soliciting interest from local water agencies for commitments to purchase desalinated water from the Huntington Beach Plant several years ago. In fact, the City entered into a non disclosure agreement with Poseidon in 2010 to receive information on the project. Over the last few years, the City participated in a working group with other agencies interested in the Huntington Beach project. The group met on a regular basis at the Municipal Water District of Orange County (MWDOC) to review project study results and to discuss the proposed attributes and costs of the proposed project. Garden Grove participated in this process for a couple of years and announced its resignation in 2012 due to the high costs of the water from the project. The working group ended in 2013 with limited interest among agencies to participate in the project. Since then, the Orange County Water District (OCWD) has been exploring the project and is now in contract discussions.

Earlier this month the OCWD approved a non binding term sheet that establishes the framework of a contract that is due by December 31, 2016. The term sheet provides sufficient information to determine the financial impact to the City.

### DISCUSSION

#### *Desalination*

The desalting or desalination process separates saline water into two streams: fresh water and water containing concentrated salts, or brine. Although there are many technologies that can be considered for desalination, the two most widely used desalting technologies are thermal (distillation) processes and membrane (filtration) processes, such as reverse osmosis (RO). Poseidon uses RO.

Reverse osmosis is a process where pressure is used to force water through a semi-permeable membrane that filters and removes up to 99% of the solids in the seawater, including the salts. Of all the available technologies, reverse osmosis is



## Desalination – a White Paper on the Garden Grove Perspective

considered the best available technology for desalination, due to high salt removal rate, lower waste stream volume, and lower energy consumption and capital costs. Following desalination treatment, the product water requires further post-treatment (pH stabilization and disinfection) to meet potable water standards and to be non-corrosive.

There are many applications of RO, including treatment of brackish and waste water and the costs for producing water from these sources is equal or below the cost for water from traditional sources. Advances in RO membrane and energy recovery system technologies have significantly reduced the capital and operating costs of seawater desalination projects over the past 30 years. However the costs of desalting seawater remain significantly higher than more traditional water sources. Because of its high costs, large scale ocean desalination has only been used in areas where water supplies are extremely limited and expensive to procure. Continued dramatic cost reductions for RO treatment are not expected to continue because it appears that the most significant technological advances have already occurred in the membrane industry.

The following is a list of similar Seawater Reverse Osmosis (SWRO) desalination projects that are currently in operation, under construction, or are being considered/proposed in the United States during the last decade:

- Marina Coast Water District, CA - 0.3 MGD in operation
- Tampa Bay, FL - 25 MGD in operation
- Cambria Community Services District, CA - 0.5 MGD in design, on hold
- Marin Municipal Water District, CA - considered 5 to 10 MGD, halted due to the voter approval requirement
- Honolulu Board of Water Supply, HI - proposed 5 MGD, on hold due to conservation efforts.
- Long Beach, CA - proposed 9 MGD, determine not be cost effective.
- Carlsbad, CA - construction is nearing completion of 50 MGD. This is a Poseidon project.

### *City Water Program*

The City is reliant on two primary sources of water, pumped and imported. On average, we are pumping 70% of our water from 13 City owned wells and we purchase import water for the remaining 30% from the Municipal Water District of Orange County (MWD OC). Our wells draw water from a basin that is under the management of the Orange County Water District (OCWD) and they are responsible for setting the pumping percentage, which is why we pump about 70%. The City wells are capable of delivering 100% of our water supply for limited periods of time, and we are one of two agencies that can pump all of our needs.

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The City currently pays **\$294** per AF to OCWD for pumped water and we pay MWDOC **\$923** per AF for imported water. If the City were to pump over the set percentage we will have to pay **\$614** per AF from OCWD on the extra water making it equal to the cost of MWDOC imported water.

The Orange County Basin contains about 38 Million acre feet of water, the OCWD has determined that the maximum dry storage (empty volume) of the basin should be limited to 500,000 acre-feet (AF). OCWD's goal is to operate the basin with 200,000 AF of dry storage which is within the safe operating range of 100,000 to 434,000 AF of available dry storage. Currently the basin has 380,000 AF of dry storage available.

Last year the City used approximately **25,100** AF of water, which is down from a peak of **30,000** AF in 2005. The reason the City's usage has dropped lies in two recent pieces of legislation. Senate Bill x7-7 for water conservation, seeks to achieve a 20% statewide reduction in urban per capita water use by December 31, 2020 and an interim 10% goal by 2015. Additionally, Governor Brown has issued an emergency mandate for the City to reduce our water use by 28% of our 2013 water usage. Therefore the City needs to reduce our usage by just over **7,000** AF by February of 2016. Therefore the most pressing need for the City's water program at this time is the implementation of water conservation measures to achieve this goal and avoid any State fines for non compliance.

### *Fiscal Analysis*

The total fiscal impact to Garden Grove's rate payers is difficult to assess at this time because of the following unresolved issues:

- The cost to distribute water - injected into the basin or distributed in upsized pipes to retailers. This cost is borne by the OCWD in the term sheet.
- Final disposition of MWD Local Resources Program (LRP) - a subsidy that will be passed to Posiedon thus lowering the cost to OCWD thus lowering the cost to OCWD for the early years of the 50 year commitment.
  - Three options are available for payment. Currently Posidon is leaning towards the largest that covers the first fifteen year of the project operation.
  - MWD could require a reduction in demand in effect cause OCWD to exchange high cost Posiedon water with MWD import.
- Additional costs that may be required for environmental mitigation, such as a new underground intake system.
- Financing for the project is not in place.

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These preceding issues are significant and have the ability to significantly increase the proposed cost of water detailed on the Poseidon term sheet. OCWD's independent financial analysis of the Poseidon estimates that groundwater pumping costs will increase 32.7% to cover the cost of the project. Using our existing pumping amounts and the additional amount of desalinated water available to use, we can determine that Garden Grove can expect to add between just over \$1M to just under \$2M per year in water costs. This will increase the average residential rate payer bill by \$6 to \$12 or from 6-12%.

### *Alternatives*

There are a few alternatives being suggested at this time, please see Exhibit "A" that shows possible fiscal impacts of Poseidon and of the recharging option being proposed by the Irvine Ranch Water District (IRWD):

- Purchase MWDOC water during "good times" and recharge the basin with 280,000 acre feet of water (equals Poseidon output for about 5 years and 3 mo's). These "good times" in the past included all but two years during nearly the last thirty years. This IRWD option would have provided a full basin at the beginning of this year at a ten year cost of over \$500 Million less that the Poseidon project and is environmentally friendly.
- Expand OCWD's Ground Water Replenishment System (GWRS) again or construct a new facility, the successful ground water recharge system using treated sewage is already expanding and will be online by the end of 2015. The \$142.7 million project will create an additional 30 million gallons per day of new water supplies as compared to the Poseidon project that may produce 50 million gallons per day at an estimated cost of \$1 Billion.
- Conservation, the price and impact to the environment are negligible and this option is immediately available to us with State and Regional funds available to implement. It should be noted that this option will also assist the City in meeting our mandatory reduction mandate from the State.
- Construct additional measures within and adjacent to the local storm channel that will infiltrate storm water into the basin.
- Expand the recycled water system, this is the "purple line" that uses partially treated sewage to provide non-potable water for uses like irrigation. This option will also help the City meet our mandatory reduction goals.

# Desalination – a White Paper on the Garden Grove Perspective

## *Summary of Findings*

Due to high capital and operational costs, and currently a non-existent need for additional water, desalination is not an option for immediate City water supply needs. Desalination may play a part in long-range planning (2025 -2035 timeframe), but probably under the circumstance that the project can obtain significant state and federal funding assistance. The proposed site is likely to remain available into the future.

The following are the advantages and disadvantages of a desalination program as compared to other options, such as a GWRS program.

### Advantages of a Desalination Facility:

- Less significant distribution pipeline system required when compared to non potable water sources
- Desalination is a new source of potable water, which increases the City's flexibility for using this supply for any potable, irrigation or industrial use

### Disadvantages of a Desalination Facility:

- Extensive environmental review process (full EIR) and permits still required with uncertain mitigations.
- Potential additional treatment for certain emerging contaminants due to the mixing of desalinated water with existing imported and groundwater supplies
- Increased brine discharges to the ocean
- Very high capital and operating costs and financial risk in the event of default if OCWD finances the distribution system
- Significant timeline for implementation (5-7 years from initiation)

OCWD already has implemented a recycled water and water conservation program. While the effectiveness of the conservation program is yet to be determined, the GWRS is recognized as an industry leading example.

## SUMMARY

The City was hopeful when we entered into the 2010 agreement with Poseidon for a desalination water supply that could provide increased reliability to the City especially during times of a drought. Unfortunately the original promise of a new water supply at the same cost as imported water has been replaced with a project that will provide water at double the cost of imported water. The cost escalation is similar to the Poseidon project in San Diego. When compared to other options a

## Desalination – a White Paper on the Garden Grove Perspective

desalination facility is a relatively expensive option for a new potable water supply for the City of Garden Grove and will not immediately resolve the City water's conservation mandate.

However, the City should continue to be open to new sources of water and new ideas and urges OCWD to fully explore less expensive options currently available to it before proceeding with ocean desalination. In time, a project such as Poseidon may become economically viable and environmentally sound and it is unlikely that a decision to forego its implementation at this time will preclude its future use.